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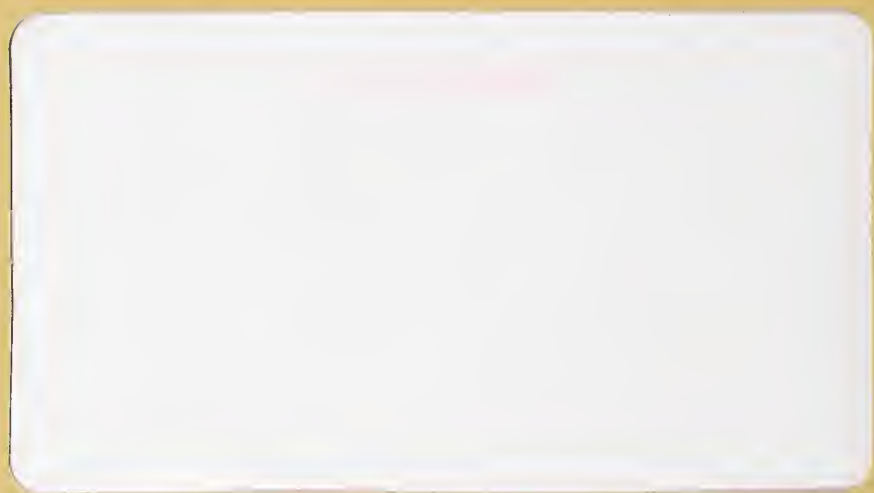
Staff Summary Series

GRADUATE MEDICAL EDUCATION: FINANCING,
COSTS, AND ORGANIZATION

Jack Hadley, Ph.D., and Frank Sloan, Ph.D.
Principal Investigators

James R. Cantwell
Federal Project Officer

Department of Health and Human Services
Health Care Financing Administration
Office of Research and Demonstrations



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A summary of the Final Report of Health Care Financing Administration Grant No. 95-P-97176/3-04. The statements and data contained in this paper do not represent any official opinion of or endorsement by the Health Care Financing Administration or The Urban Institute.

February 1983

Project Summary

Graduate Medical Education: Financing, Costs, and Organization

I. Study Objectives

This study had five objectives:

- a) to describe the current financing of graduate medical education,
- b) to analyze the relationship between reimbursement methods and methods of compensating teaching physicians,
- c) to analyze the impact of reimbursement on residents' stipends,
- g) to estimate teaching hospitals' demand for residents, and
- e) to investigate the effects of teaching programs on hospitals' costs, ancillary service use, and length of stay.

II. Program Background

The purpose of the first objective was to establish a reliable picture of how much was being spent on the direct costs of graduate medical education, residents' stipends, and teaching physicians' salaries and what sources of funds were being used to pay these costs. In addition, the study sought to identify how Medicare, Medicaid, and other third-party payers reimburse educational expenses and whether there is a reimbursement bias which favors training in inpatient rather than outpatient settings.

The study's second objective was directed primarily at what was known as the Section 227 debate over how Medicare should reimburse physicians' teaching services and physicians' individual patient care services. The former would normally be treated as a hospital expense under Part A, Medicare's Hospital Insurance program, and the latter as a physician expense covered by Part B, the Supplementary Medical Insurance program. There were two concerns: whether Medicare might be paying twice for some services, since teaching physicians could both

receive a salary under Part A and submit fee-for-service bills under Part B; and whether Medicare's methods of payment might be distorting the compensation method chosen by hospitals and physicians in a way that would lead to higher costs for Medicare.

Stipends are essentially wages paid to residents. Thus, the goals of this study objective were to estimate the impact of third-party payments, especially Medicare and Medicaid, on stipend levels and to determine whether stipends have a rationing function similar to wage rates in a conventional labor market.

The fourth study objective was to analyze the factors affecting teaching hospitals' demand for residents. Do increases in stipends influence the number of positions offered? Does the demand function vary by medical specialty, by hospital size, or by community size? How do other key economic factors--the hospital's revenues and its output levels--influence demand?

The fifth objective was to examine the relationship between teaching programs and some of the factors that determine average cost per case. How much more or less does it cost to treat comparable patients in teaching and nonteaching hospitals? It has been hypothesized that teaching programs add to hospital costs in two basic ways. One is that residents and teaching physicians spend substantial amounts of their time doing things other than providing patient care. This nonpatient-care time is an extra cost that nonteaching hospitals do not incur. The other hypothesis is that the teaching process leads to the ordering of extra tests and procedures. For example, residents may be less experienced than full-fledged physicians and need more information to make clinical decisions. Alternatively, so that each resident will have the same educational output from providing care, (multiple) tests may be ordered for some patients by each resident who participates in providing care.

III. Key Findings

A. Current Financing of Graduate Medical Education

The study estimated that the total annual cost of house officers' stipends and fringe benefits in 1978-79 was about \$1.6 billion. Nearly 90 percent of the funds to pay these costs came from patient care revenues. Salaries paid to physicians for educational activities amounted to \$376 million. Thus, the total direct expenses for GME were just under \$2 billion in 1978-79. These costs were about 5 percent of teaching hospitals' total revenues, and less than 1 percent of the \$206 billion spent for all health services and supplies. Overall, the data reported here clearly demonstrate the dependence of the GME system on revenues from providing patient care services.

B. Methods of Compensating Teaching Physician

The model developed under this grant predicts that increasing reimbursement levels for medical care induces the hospital to provide more patient care services. An increase in grants (nonpatient-care revenues) has the opposite effect.

Empirical tests of the model used data from two hospital surveys, one conducted by the American Hospital Association in 1973 and the other by the Institute of Medicine in 1975. The percentage of physicians receiving salary compensation was the dependent variable.

In general, the empirical results based on the two data files were consistent with each other and with the implications of the theoretical model. Variables associated with high prices for physicians' services (a low percentage of Medicaid revenues, high county population per nonhospital physician, high county income per capita, and good insurance

coverage for physicians' services) all had a negative impact on the percentage of salaried physicians. Conversely, nonpatient-care variables (teaching, research, and high nonpatient-care revenues) had a positive association with salary compensation.

C. Impact of Reimbursement on Residents' Stipends

Most of the real (adjusted for inflation) increases in stipends occurred during the late 1960s. Between 1965-66 and 1970-71, real stipends rose by 71.9 percent. This increase in stipends, coupled with a doubling in the number of residents, caused total stipend payments to increase nearly eightfold between 1965-66 and 1979-80.

Why have residents' stipends gone up so much? Such a dramatic increase usually indicates that demand has exceeded supply. It appears that a fairly substantial increase in the demand for residents, perhaps occasioned by the introduction of Medicare and Medicaid, set off this pattern of escalating stipends.

Two periods can be identified. In the first period, real stipends rose. In the second period, real stipends fell. Between 1965-66 and 1972-73, real stipends rose by more than 96 percent. Between 1972-73 and 1979-80, in contrast, real stipends fell by more than 12 percent. The first period seems to have been marked by an excess demand for residents (a shortage), and the second seems to have been marked by an excess supply of residents (a surplus).

D. Teaching Hospitals' Demand for Residents

The goal of this part of the study was to explore whether hospitals' decisions to offer residency training, that is, demand residents, could be explained within the context of the traditional economic theory of the demand for labor by business firms. Specifically, the authors hoped to determine whether economic factors such as residents' stipends, the

hospital's revenues from providing patient care services, and the volume of care provided are important influences in the graduate medical education system.

The statistical results were quite consistent with the labor market approach to explaining how many residents teaching hospitals desire and whether or not a hospital offers graduate medical education at all. Increases in stipend levels tend to reduce hospitals' demands for residents, while increases in either hospital revenues or output levels stimulate the demand for residents.

For the first time in decades, the total number of residents on duty actually declined from 64,615 to 61,819 between 1979 and 1980. This has led some to sound the alarm for a new crisis--there may not be enough residency training positions available to place all of the students currently receiving undergraduate medical training. Although the simple numbers make the situation seem tight, this report suggests that there are self-correcting elements in the structure of the "labor market" for residents. Growth in the total supply of residents will manifest itself in hospitals in the form of adequate, if not excessive, numbers of applications from well qualified medical school graduates. This will continue the downward pressure on the stipend a hospital must pay its residents. If residents' wages continue to fall, then hospitals in the aggregate will in fact have incentives to offer more training positions.

E. Effects of Teaching Programs on Hospitals' Costs, Ancillary Service Use, and Length of Stay

The report estimated the effects of teaching status, case mix, and size on costs for the hospital as a whole. The effects of case mix and size are included because complex case mix and large size are usually associated with large teaching programs. Just having residents

contributes 5.2 and 2.0 percent to mean nonphysician expense per adjusted patient day and per adjusted admission, respectively. However, the coefficient for teaching status is not statistically significant at conventional levels.

Estimates of the percentage impact of teaching status on departmental costs for six departments are presented in the study. Departmental costs are measured in three ways: per adjusted patient day, per adjusted admission, and per unit of departmental output (when appropriate). Payments to physicians are not pertinent to any of these nonclinical cost centers. The results show that, although most of the teaching effects are positive for nursing administration and medical-surgical unit nursing, no coefficient underlying a percentage teaching effect is statistically significant at conventional levels. However, Council of Teaching Hospitals (COTH) are significantly more costly than other hospitals in terms of per diem pharmacy expense, dietary and plant operations expense per diem and per case, and housekeeping costs per diem.

Holding numerous utilization determinants including case mix constant, in this study the level of teaching activity has no statistically significant effect on utilization nor are any effects on utilization attributable to the degree of commitment to teaching discernable. Holding case mix and other factors constant also greatly reduces the cost difference attributable to teaching. Nonphysician expense in medical school-affiliated, non-COTH hospitals is less than 10 percent higher on average, ceteris paribus, than in nonteaching hospitals; the differential is at most 20 percent for COTH hospitals.

IV. Policy Implications

A. Current Financing of GME

Overall, the data reported in this study clearly demonstrate the dependence of the GME system on revenues from providing patient care services. They also suggest that efforts to restrict salaried teaching physicians' billings for professional services would probably have a greater impact on public than on private teaching hospitals, since salaried compensation is quantitatively more important in public hospitals. Finally, an examination of reimbursement bias in favor of inpatient care showed that it is primarily a consequence of less insurance coverage for outpatient care, and not the result of Medicare and Medicaid reimbursement policies.

B. Methods of Compensating Teaching Physicians

Of particular interest for policy purposes are the coefficients of the Medicare and Medicaid variables (measuring the percentages of the hospital's care to each program) in an equation explaining percent of physicians receiving salary compensation. The insignificance of Medicare suggested that cost reimbursement of hospitals per se is not a factor influencing the choice of compensation method (although the extent of insurance coverage for hospital services is). Since Medicaid enters with a positive and highly significant coefficient in all equations, this suggests that public policy affects compensation arrangements through its impact on the price of physicians' services.

Another implication is that prohibiting percentage-of-revenue arrangements for hospital-based-physicians will simply lead to more fee-for-service billing, rather than salary, as long as physicians' fees continue to be high. Thus, if it is thought that salaried compensation is in some sense "better" (which in the context of this model means the delivery of fewer patient services), the appropriate objective for public

policy would be to constrain physicians' fees. Finally, the insignificance of Medicare in both the teaching hospital and nonhospital-based physicians equations also suggested that incentives for double billing by teaching physicians may not be as great as implied by the formerly proposed Section 227 regulations.

C. Impact of Reimbursement on Resident's Stipends

It seems likely that real stipends for residents will continue to drop in the near future. The supply of potential residents will continue to increase as larger classes are graduated by U.S. medical schools. As hospitals find it easier to fill their residency slots with U.S. medical school graduates, pressures to raise stipends will ease. It does not appear that the market for residents adjusts particularly quickly, but it does seem to adjust.

D. Teaching Hospital's Demand for Residents

The demand equations estimated in this report indicate the direct effects of stipends, revenues, and output levels on the demand for residents. They imply that direct manipulation of these factors by policy will indeed influence teaching hospitals' decisions about graduate medical education. For example, subsidies for residents' stipends, through grants directly to training programs, will stimulate demand. Conversely, disallowance of stipends by cost reimbursers will make residents more expensive to the hospital and discourage their employment. Tighter rules for reimbursing hospitals, for example, extending Medicare's Section 223 ceilings to ancillary services or not increasing the ceilings as fast as costs, will exert downward pressure on teaching program size. If, however, teaching hospitals are exempted from such rules or were to receive funds from some other source, as has been proposed by some members of Congress, then these pressures would be offset. Proposals that would formally require certain Medicaid-eligible patients to obtain care only from teaching hospitals would increase those hospitals' output

levels, and thus stimulate the demand for residents. A more likely concern to teaching hospitals, though, is the loss of patients to less expensive nonteaching and community hospitals. Reductions in patient census and the volume of outpatient services will induce hospitals to offer fewer training positions.

E. Effect of Teaching Programs

The primary goal of the last phase of this study was to explore whether public policy should be concerned about graduate medical education because of its effects on teaching hospitals' costs. The notion that medical education raises the cost of hospital care has long been part of the conventional wisdom. The main reason for this alleged cost difference is thought to be the extra number of procedures and consultations performed, reflecting both teaching demands and the intrinsic complexity of case mix in teaching hospitals. To the extent that teaching hospitals have a tougher job medically, no one would argue against paying them more per patient day and per case. Whether the higher costs associated with teaching should be reimbursed is much more debatable, especially in an era of cost containment, and no one would want to subsidize pure inefficiency in teaching hospitals.

The results of this study imply that paying teaching hospitals more is not tantamount to subsidizing teaching activities. Higher average levels of payment per unit of output than nonteaching hospitals can be justified on the basis of differential case mix alone. It also follows that teaching hospitals have more to lose if the hospital cost inflation problem leads to arbitrary ceilings and limits on hospital payments. Teaching hospitals would be well advised to become active partners in developing reimbursement methods that not only meet their justified resource needs, but also help to bring hospital cost increases down to a publicly acceptable rate.

V. List of Papers and Publications

The following papers and publications were either fully or partially supported by this grant.

- Becker, Edmund R. and Frank A. Sloan, "Utilization of Hospital Services: The Roles of Teaching, Casemix, and Reimbursement," forthcoming, Inquiry, 1983.
- Becker, Edmund R. and Bruce Steinwald, "Determinants of Hospital Casemix Complexity," Health Services Research, Winter 1981.
- Feldman, Roger, Frank Sloan and Lynn Paringer, "Compensation Arrangements between Hospitals and Physicians," The Bell Journal of Economics, Vol. 1, No. 1, Spring 1981.
- Feldman, Roger, Frank Sloan, Lynn Paringer and Jack Hadley, "An Analysis of Hospitals' Methods of Compensating Physicians," Urban Institute Working Paper No. 1302-02, December 1979.
- Hadley, Jack, "Background Information on the Reimbursement of Hospitals' Teaching Expenses," Urban Institute Working Paper No. 1302-01, December 1979.
- Hadley, Jack, "Medicaid and Teaching Hospitals: Current Policies and Future Consequences," forthcoming, Journal of Health Politics, Policy, and Law, 1983.
- Hadley, Jack, "Medical Education and Payment for Health Care Services," forthcoming in the Proceedings of the Miller Conference, A. Gorr and C. McGuire, eds., 1983.
- Hadley, Jack, "Preliminary Notes on a Static Demand-For-Residents Model," Urban Institute Working Paper No. 1302-5, February 1980.
- Hadley, Jack and Patricia Tigue, "Financing Graduate Medical Education: An Update and a Suggestion for Reform," Health Policy and Education, 3 (1982) 157-171.
- Hadley, Jack and Patricia Tigue, "Financing Graduate Medical Education: An Update and a Suggestion for Reform," Urban Institute Working Paper No. 1302-7, January 1981.
- Hadley, Jack, et al., "An Economic Analysis of Graduate Medical Education: The "Labor Market" for Residents and the Impact of Teaching on Hospital Costs and Service Utilization," Urban Institute Working Paper No. 1302-9, December 1982.
- Lee, Robert H., "Medical Students' Residency Choices and Their Practice Location Plans," Urban Institute Working Paper No. 1302-03, January 1980.

Lee, Robert H., "Regional Physician Supply and Graduate Medical Education," Urban Institute Working Paper No. 1302-04, January 25, 1980.

Lee, Robert H., "The Not-For-Profit Firm's Demands for Inputs Under Alternative Systems of Revenue Regulation: Hospitals' Responses to Cost-Based and Prospective Reimbursement," Urban Institute Working Paper No. 1301-8, June 1982.

Medical Education Financing, Policy Analyses and Options for the 1980's, Jack Hadley, ed., Prodist, New York 1980.

Sloan, Frank A., Roger D. Feldman and Bruce Steinwald, "Effects of Teaching on Hospital Costs," forthcoming, Journal of Health Economics, 1983.

Steinwald, Bruce, "Compensation of Hospital-Based Physicians," forthcoming, Health Services Research, 1983.

Steinwald, Bruce, "Employment of Residents in Community Hospitals: A Multivariate Analysis," Social Science & Medicine, Vol. 15C, pp. 165-173, 1981.

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ict Description/Abstract : THIS REPORT INVESTIGATES 5 ASPECTS OF GRADUATE MEDICAL EDUCATION: 1) THE CURRENT FINANCING OF GRADUATE MEDICAL EDUCATION, 2) THE RELATIONSHIP BETWEEN REIMBURSEMENT METHODS AND METHODS OF COMPENSATING TEACHING PHYSICIANS, 3) THE IMPACT OF REIMBURSEMENT ON RESIDENTS' STIPENDS, 4) TEACHING HOSPITALS' DEMAND FOR RESIDENTS, AND 5) THE EFFECTS OF TEACHING PROGRAMS ON HOSPITALS' COSTS, ANCILLARY SERVICE USE, AND LENGTH OF STAY. DATA FROM SEVERAL HOSPITAL DATA BASES ARE USED IN THIS STUDY, INCLUDING A 1979 MAIL SURVEY OF ALL SHORT-TERM, GENERAL, NONFEDERAL HOSPITALS OF 100 OR MORE BEDS CONDUCTED BY THE AHA UNDER SUBCONTRACT TO THE URBAN INSTITUTE. THE STUDY ESTIMATED THAT THE TOTAL COST OF HOUSE OFFICERS' STIPENDS AND FRINGE BENEFITS AND PHYSICIANS SALARIES FOR EDUCATIONAL ACTIVITIES WAS NEARLY \$2 BILLION IN 1978-79. WHEN NUMEROUS UTILIZATION DETERMINANTS INCLUDING CASEMIX ARE HELD CONSTANT, THE LEVEL OF TEACHING ACTIVITY HAD NO STATISTICALLY SIGNIFICANT EFFECT ON UTILIZATION. HOLDING CASEMIX AND OTHER FACTORS CONSTANT ALSO GREATLY REDUCES COST DIFFERENCES ATTRIBUTABLE TO TEACHING.

NB: NISB HARD FILE DOES NOT HAVE A COPY OF THIS FINAL REPORT. A STAFF SUMMARY AND OTHER PAPERS ARE, HOWEVER, AVAILABLE.

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